

CLAIMS

## WHAT IS CLAIMED IS:

1. A process for making a surfacing material having a decorative pattern which comprises preparing a mixture of a flowable thermosettable molding  
5 formulation and orientable anisotropic aesthetic-enhancement particles, said particles having an aspect ratio of at least 3, mixing the particles and said molding formulation to orient at least some of the particles along lines of flow of the molding formulation during mixing, further orienting said particles by dividing the resulting mixture into charge fragments, and forming a multiplicity of domains of the mixture  
10 in which interfaces of adjacent domains exhibit shading variations along their interfaces by feeding the charge fragments into a hot mold, and fusing adjacent surfaces of the fragments by applying heat and pressure.
2. The process of claim 1 wherein the anisotropic aesthetic-enhancement particles are plate-like having three dimensions, two of said dimensions being larger  
15 than a third dimension.
3. The process of claim 1 wherein the anisotropic aesthetic-enhancement particles are fiber-like, having three dimensions, one of said dimensions being larger than the other two dimensions.
4. The process of claim 1 wherein the anisotropic aesthetic-enhancement  
20 particles are ribbon-like, having three dimensions, one of said dimensions being larger than the other two dimensions, the second dimension being large enough relative to the third dimension that it is visibly distinguishable.
5. The process of claim 2 where the plate-like particles are selected from the group consisting of mica, synthetic mica, glass, metal flake, alumina, silica,  
25 polymer flake, ceramic, synthetic colorant, and combinations thereof.
6. The process of claim 3 where the fiber-like particles are selected from the group consisting of glass, metal, carbon, ceramic, polymer, natural fibers and combinations thereof.
7. The process of claim 4 where the ribbon-like particles are selected from  
30 the group consisting of glass, metal, carbon, ceramic, polymer ribbons and combinations thereof.
8. The process of claim 1 wherein said molding formulation contains a thermosettable acrylic component and the anisotropic particles are mica.

9. The process of claim 1 wherein said molding formulation contains a thermosettable resin selected from the group consisting of thermosettable polyester, epoxy, urethane, acrylo-urethane, and melamine resin and combinations thereof.

10. The process of claim 1 wherein a finely divided filler with an aspect  
5 ratio less than three is mixed with the formulation

11. The process of claim 10 wherein the finely divided filler is selected from the group consisting of alumina trihydrate, calcium carbonate, silica, alumina, barium sulfate, alumina monohydrate, aluminum hydroxide, aluminum oxide, aluminum sulfate, aluminum phosphate, aluminum silicate, Bayer hydrate,  
10 borosilicates, calcium sulfate, calcium silicate, calcium phosphate, calcium carbonate, calcium hydroxide, calcium oxide, apatite, glass bubbles, glass microspheres, glass fibers, glass beads, glass flakes, glass powder, glass spheres, barium carbonate, barium hydroxide, barium oxide, barium sulfate, barium phosphate, barium silicate, magnesium sulfate, magnesium silicate, magnesium  
15 phosphate, magnesium hydroxide, magnesium oxide, kaolin, montmorillonite, bentonite, pyrophyllite, mica, gypsum, silica, ceramic microspheres, ceramic particles, and ceramic whiskers, powder talc, titanium dioxide, diatomaceous earth, wood flour, borax, and combinations thereof.

12. The process of claim 10 wherein the finely divided filler is alumina  
20 trihydrate.

13. The process of claim 1 wherein one or more additional molding formulations are blended with said flowable thermosettable molding formulation.

14. The process of claim 1 wherein the charge fragments are coated with a colorant.

25 15. A decorative surfacing material comprised of a multiplicity of domains of a thermoset molding formulation, said domains having an interface between adjacent domains, at least some of said domains containing oriented particles having an aspect ratio of at least three and oriented along lines formed by interfaces of the adjacent domains, said surfacing material exhibiting a decorative pattern with  
30 shading variations in the domains along the interfaces.

16. The material of claim 15 wherein said particles are plate-like and are selected from the group consisting of mica, synthetic mica, glass, metal flake, alumina, silica, polymer flake, ceramics, and combinations thereof.

17. The material of claim 15 wherein said particles are fiber-like and are selected from the group consisting of glass, metal, carbon, ceramic, polymer, natural fibers and combinations thereof.

18. The material of claim 15 wherein said particles are ribbon-like and are  
5 selected from the group consisting of glass, metal, carbon, ceramic, polymer ribbons and combinations thereof.

19. The material of claim 15 wherein said thermoset molding formulation is comprised of a thermosettable acrylic component and the anisotropic pigment is mica.

10 20. The material of claim 15 wherein said thermoset molding formulation contains a thermoset resin selected from the group consisting of acrylic, polyester, epoxy, urethane, acrylo-urethane and melamine resins and combinations thereof.

21. The material of claim 15 wherein a finely divided filler having an aspect ratio of less than three is present with said thermoset molding formulation.

15 22. The material of claim 21 wherein said finely divided filler is selected from the group consisting of alumina trihydrate, calcium carbonate, silica, alumina, barium sulfate, alumina monohydrate, aluminum hydroxide, aluminum oxide, aluminum sulfate, aluminum phosphate, aluminum silicate, Bayer hydrate, borosilicates, calcium sulfate, calcium silicate, calcium phosphate, calcium  
20 carbonate, calcium hydroxide, calcium oxide, apatite, glass bubbles, glass microspheres, glass fibers, glass beads, glass flakes, glass powder, glass spheres, barium carbonate, barium hydroxide, barium oxide, barium sulfate, barium phosphate, barium silicate, magnesium sulfate, magnesium silicate, magnesium phosphate, magnesium hydroxide, magnesium oxide, kaolin, montmorillonite,  
25 bentonite, pyrophyllite, mica, gypsum, silica (including sand), ceramic microspheres, ceramic particles, and ceramic whiskers, powder talc, titanium dioxide, diatomaceous earth, wood flour, borax, and combinations thereof.

23. The material of claim 21 wherein the finely divided filler is alumina trihydrate.

30 24. The material of claim 15 wherein one or more additional molding formulations containing the same, different or no orientable particles are blended with said thermoset molding formulation.

25. The material of claim 15 wherein said domains are coated with a colorant.